Fixed Wireless Opportunities in Indiana

Entrepreneurs Fill The Void of Digital Exclusion in our Rural Communities

Where does MuniWireless Fit In?

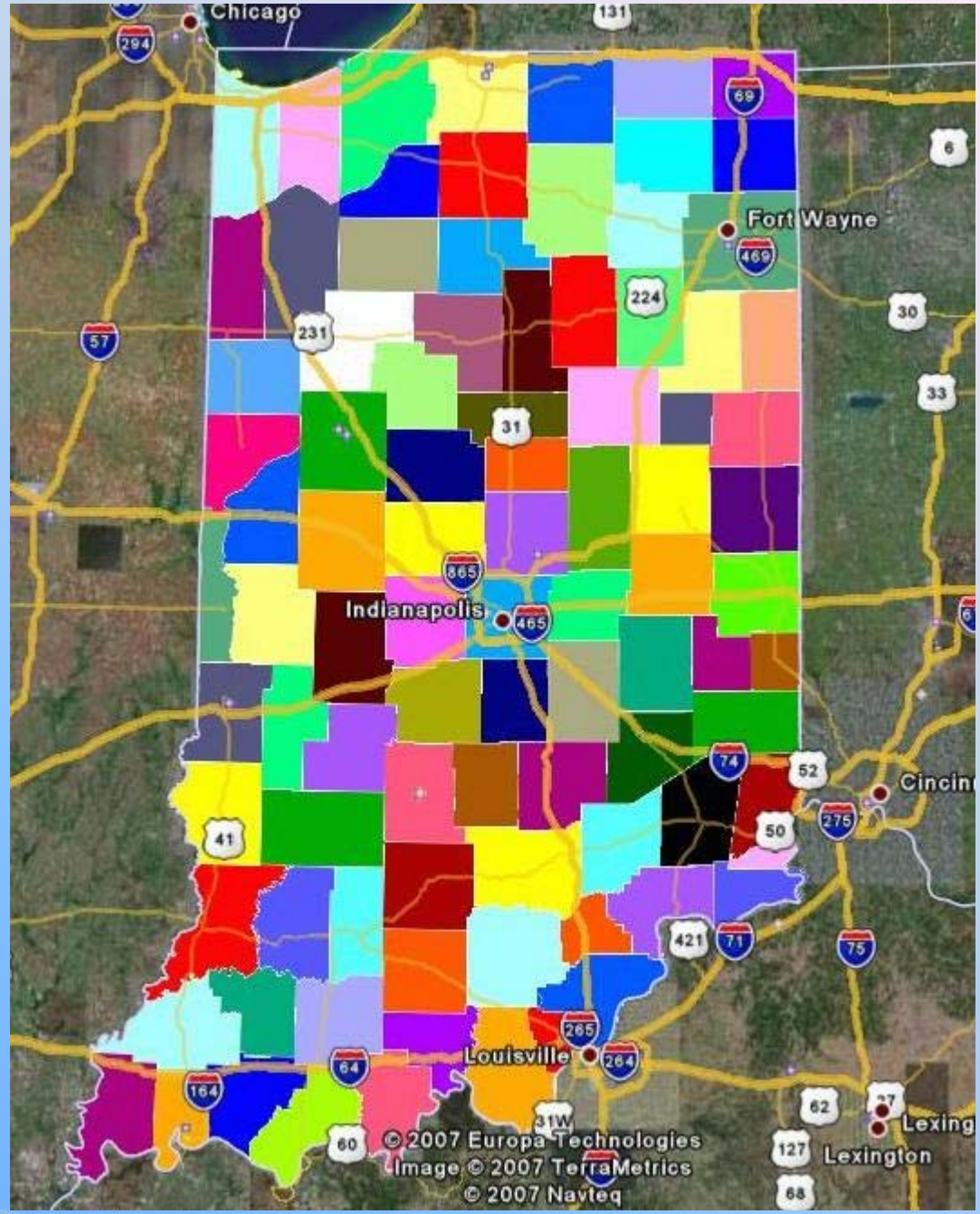
Fixed Wireless Operators

- At peak it is estimated that there were roughly 6000 WISPs operating in the US.
- Estimates are now 2000.
- Factors of the Decrease
  - Low DSL pricing and broader DSL deployments
  - Insufficient Funding and Poor Business Plans
  - Belief in Vendor Claims of Capacity and Penetration
  - Competition
  - Operating Costs higher than anticipated
  - Mature Internet Users demand for more content increased, more than the capability of manpower, equipment and frequency availability
  - Mighty Marketing Engines of ILEC and CableCo. Competition

Indiana

- Approximately 60 operating WISPs
- Competitive Spirit with mutual respect and cooperation (We recognize the HARD WORK)
- Connecting Networks
  - Sharing resources (installers, data centers, tech support, volume purchasing, tower crews, etc.)
  - Building redundancy
  - Provide Better Customer Service
  - Quicker Deployments, Better Bottom Line
  - vWISPs (Virtual Wireless Providers) Outsourcing

- 60 WISPs
- 72 Counties Covered At Least Partially by WISP Networks
- 20 Counties either don't have any WISP coverage or operating WISP is unknown at this time
- Listing of Operating WISPs by County is available at:
- http://www.findawisp.com
- http://www.onelasvegas.com/wireless/IN.html
- http://www.wispdirectory.com/




Municipal Wireless
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- Managed-Services Model (public-private partnership)
  - Local government partners with a private entity, such as a service provider, to build and operate the network. The service provider owns and manages the network charging recurring fees for connectivity and value-added services.
  - Government agencies, businesses, and citizens can connect to the network and it is up to the service provider to determine what services are available to these constituents. The local government generally leases buildings and light poles to the service provider for mounting wireless equipment, but doesn't commit any additional physical assets to the network.
  - This model has several advantages for the municipality.
    - First, it frees the municipality from incurring heavy, upfront capital expenditures to install the network and instead, allows them to budget for a predictable operational expense.
    - Second, it frees the government IT department from the burden of managing hundreds or thousands more network nodes.
    - Third, it lets the municipality build a technology refresh into the network without added investment, since it is the service provider's responsibility to update the network technology (and service providers are typically motivated to do so, lest a competitor step in and make them obsolete).

Municipal Wireless

- Wholesale Model
  - In a wholesale model, a municipality owns and manages the outdoor wireless network for internal operations and may share a limited amount of excess bandwidth with citizens to connect to the Internet (usually provided free of charge).
  - The municipality, in turn, resells bandwidth to various service providers giving those service providers access to their citizens. One of the benefits of this model is that it gives the municipality complete freedom to control, evolve, or change applications. It also gives the city the option to allow business and residential customers to work with more than one service provider.
  - The downside of the wholesale model is exactly the opposite of the upside to the managed-services model. It generally requires a high, upfront expense, the government IT staff must manage the operations, and there is no guarantee that the city will have the funding to do periodic technology upgrades.

Municipal Wireless

- Hybrid Model
  - In a hybrid model, a municipality owns the network but outsources most of the day-to-day operations to a systems integrator or wireless Internet service provider.
  - One of the benefits of this model is that it gives the municipality a measure of control, but at the same time allows the city's IT department to use the expertise and resources of the systems integrator or service provider to make system changes as needed.
  - This model still requires a large upfront cost and requires the government take responsibility for technology refresh cycles, but does lower the ongoing operational expenses.

Thinking Outside the Box

- Advantages
  - Creates a foundation for advanced applications and services like video security, automated meter reading, mobile land management, and convention and tourism Internet access
  - With the city government actively participating in the wireless network, it changes from being a difficult-to-justify “free” network, to becoming a win-win scenario for the City government and its constituents, and the Service Provider.
  - Basic city services such as mobility for police officers, video security and mobility, and disaster management can be offered in addition to the free access.

Future of Wireless Technologies

- Lobby Legislators for more Spectrum Availability and watch all telecommunications bills closely
- 700 MHz, OFDM, WIMAX, UMTS (Universal Mobile Telecommunications System)
- On demand content for our mobile environment, VoIP, RoIP, IPTV, AMR, Home Security, Emergency Notifications

More Outside the Box

- Municipal wireless is an eventuality, not a possibility, and a vast majority of successful networks are being deployed in partnership with a service provider who has the responsibility of operating the network.
- “Free” is an attention grabber, the reality is that a well designed network can save the city money by creating efficiencies and generate revenue by selling upgraded services and revenue generated by advertisements.

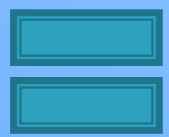
Private Wireless Networking

- More Corporations with Multiple Facilities will adopt the use of Wireless Technologies to network the facilities together
- Partnerships will develop to share excess bandwidth
- Capacities will continue to increase depending on link length. 1 Gbps links are possible today.
- Licensed Links are more affordable and paperwork process is easier than it once was.

Building Win/Win Partnerships

- “Fiber to the Sky”
- Indiana Fiber Works
- Indiana Fiber Networks

- Wisp and MuniWireless Networks



- Indiana Communication Network